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SMD Operations Procedures Manual

2.12 WORK PLANNING AND CONTROL SYSTEM

Text Pages 1 through 11
Attachment(s) 1

Hand Processed Changes

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2.12 Work Planning and Control System

1.0 Purpose and Scope

To implement a Work Planning and Control System that meets the requirements of [ESH Standard 1.3.6, Work Planning and Control for Operations](#). The system applies to internal work by Division staff as well as external departments and divisions and non-BNL personnel, who perform construction, maintenance, modification, setup and other work deemed applicable by management. The rigor of the planning and control process will be commensurate with the level of hazard and quality assurance using a graded approach. This procedure does not apply to the following work activities:

- Planning, analysis, and conduct of experiments which is governed by ESH Standard 1.3.5, Planning and Control of Experiments;
- Work covered by [Operating Procedures \(OPMs\)](#) and [Magnet Assembly Procedures \(MAPs\)](#);
- Work that is deemed skill-of-the-craft;
- General administrative-type work.

2.0 Responsibilities

2.1 Division Head

The Division Head (or designee) is responsible for the implementation of the Work Planning and Control System and shall:

- a. Appoint a Work Control Manager.
- b. Ensure that the periodic review of the work control system is incorporated into the Division [Self-Assessment Plan](#).

2.2 Work Control Manager

The Work Control Manager has overall responsibility to administer and review the Work Planning and Control (WP&C) program to ensure that all internal and external work activities meet the requirements of ESH 1.3.6. In addition, the Work Control Manager shall:

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- a. Establish a written work planning and control system procedure to meet all the requirements of ESH 1.3.6.
- b. Appoint Work Control Coordinators for each section.
- c. Appoint Primary Reviewers for each section.
- d. Ensure that personnel are trained on the requirements of this procedure such as the work screening guidelines, the work permit, worker feedback, and other key requirements.
- e. Establish periodic monitoring of the work control system performance through the self-assessment program.
- f. Coordinate with other Work Control Managers through periodic meetings to promote consistency across the site in applying the graded approach to work control and hazard analysis.

2.3 Primary Reviewers

The Primary Reviewers are responsible for the overall review and approval of moderate- and high-rated work permits. They have the authority to issue and sign off on work permits and have the responsibility to see to it that all work meets the requirements of this OPM.

A list of Primary Reviewers for the Superconducting Magnet Division can be found on the [Division List for Work Control Coordinators and Primary Reviewers](#).

2.4 Work Control Coordinators

The Work Control Coordinators are responsible for:

- a. Screening all work requests.
- b. Determining when work permits are required.
- c. Advising the requestor on how to process the work permit.
- d. Reviewing and signing for concurrence on jobs rated "low".
- e. Ensuring compliance with this procedure.

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- f. Monitoring the quality of completed work permits and maintaining the records.
- g. Notify the Building Manager of any work activities that may exceed the operational safety envelope as specified in the [Facility Use Agreement](#).
- h. Notify the Building Manager of facility changes that would affect the crosshatching on [Key Plans](#).

A list of Work Control Coordinators for the Superconducting Magnet Division can be accessed on the Plant Engineering Division web site at:
http://epweb.pe.bnl.gov/WEB_WCM.DOC

2.5 Workers

Workers are responsible for working within the limits of the work controls, providing input during job planning, and communicating feedback as appropriate.

2.6 Building Managers

Building Managers are responsible for:

- a. Being knowledgeable of all moderate- and high-rated work permit activities taking place within their facility, and ensuring that these activities do not compromise the building safety envelope as defined in the Facility Use Agreement
- b. Maintaining the accuracy of the crosshatched areas for their buildings Key Plan.

2.7 Work Requestors

Work Requestors are responsible for providing an accurate description of the scope of work to the Work Control Coordinators and for properly processing the work permits as needed through the system.

2.8 Supervisors

Supervisors are responsible for diligently applying concepts of the work control system in managing jobs and their personnel.

3.0 **Key Concepts**

Skill of the Craft The skill-of-the-craft concept has been established as a means to formally recognize the capabilities of the workers. The craft and technician personnel have the skill level and technical capabilities to handle a wide variety of jobs with minimum or no paperwork and no direct supervision. By formally separating out the low-rated work from moderate- and high-rated work, work requests are handled more efficiently, allowing more time for the job planners to concentrate on the moderate- and high-rated work. Application of the graded approach and skill-of-the-craft is a necessity to operate without compromising safety.

The skill level of the craft personnel and the technicians at BNL is high because most personnel have extensive job experience in their position and have taken numerous training courses. In some cases, they have received associate degrees. Therefore, skill-of-the-craft work can include complex tasks if the worker's experience and qualifications mitigate the hazards to a low residual risk level. Skill-of-the-craft work shall be identified in qualification matrices, which are outlined in [ESH 1.3.6, Section V.C](#).

Graded Approach A graded approach should be used to apply a level of planning rigor and work controls that is commensurate to the level of ESH&Q issues, complexity, and work coordination. In the BNL work control system, jobs are screened into low-, moderate-, or high- rated categories using a graded approach. The low-rated jobs are considered skill-of-the-craft work, whereas the moderate- and high-rated ones must have a work permit and certain levels of planning rigor. The following three factors are taken into consideration when screening work requests:

- ESH&Q Issues
- Complexity
- Work Coordination

Definitions

Work is physical activities involving maintenance, modification, setup, or construction of facilities, systems, or equipment by BNL or non-BNL personnel. The definition of work does not include the work involved in planning, analyzing, and conducting experiments.

Low-Rated Work is work requiring the attention of the average worker to prevent minor injury. Failure to correctly perform low hazard work would not damage equipment or structures or release potentially hazardous materials to the environment, except as a result of gross negligence. [ESH 1.3.6, Attachment 3, Table 1](#) and [ESH 1.3.6, Attachment 4, Table 2](#) give examples of low-rated work.

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Moderate-Rated Work is work requiring the coordinated actions of one or more person(s) to prevent any injury to personnel, minor damage to equipment or structures, or a release of hazardous materials to the environment. [ESH 1.3.6, Attachment 3, Table 1](#) and [ESH 1.3.6, Attachment 4, Table 2](#) give examples of moderate-rated work.

High-Rated Work is work requiring the coordinated actions of one or more person(s) to prevent serious injury to personnel, significant damage to equipment or structures, or releases of reportable quantities of potentially hazardous materials to the environment. [ESH 1.3.6, Attachment 3, Table 1](#) and [ESH 1.3.6, Attachment 4, Table 2](#) give examples of high-rated work.

Residual Risk is the level of risk remaining in an activity after the hazards have been mitigated by applied controls, such as personal protective equipment, lockout-tagout, and procedures.

Skill-of-the-Craft is the level of proficiency required by the worker to successfully conduct the work using existing knowledge, experience, or procedures without direct supervision. It is applied to routine, low hazard tasks that support fulfillment of a facility or group's function. The tasks can range from complex to simple day-to-day activities. Each organization defines their skill-of-the-craft work through the establishment of the qualification matrices as shown in [ESH 1.3.6, Attachment 8](#).

Work Request is a form or a verbal inquiry from one organization to another asking for services to be provided.

Work Permit is a form used to define the scope of work as per the work request, analyze the ES&H hazards, determine the work controls, plan the work, review and approve the plan, conduct a pre-job briefing, authorize the start of work, and solicit worker feedback.

External Workers are any personnel not within the Departments/Divisions who enter a facility to perform physical work (e.g., maintenance and ITD personnel, construction contractors, and vendors).

Internal Workers are the technicians, scientists, crafts, and staff personnel who are assigned permanently to do physical work within the facility or department.

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4.0 Precautions

None

5.0 Procedure

5.1 Planning and Controlling Internal Work

NOTE: *A flow diagram of the procedural steps listed in this section is shown in Attachment 1.*

- A. Work requests shall be submitted to the Work Control Coordinator (WCC) for screening. Work covered by an existing procedure (i.e. MAP or OPM) or determined to be skill-of-the-craft does not require screening.
- B. The WCC shall screen the work requests to determine if a work permit is required.
- C. To aid in this determination, the WCC shall use the qualification matrix for their section or group (if one exists) and the screening guidelines in [ESH 1.3.6, Attachment 3, Table 1](#). Table 1 provides guidelines and examples related to ESH&Q issues, job complexity/uncertainty, and work coordination.

Note: Work covered by an existing procedure (i.e. MAP or OPM) or determined to be skill-of-the-craft does not require screening.
- D. If the work does not require a work permit, it is considered low-rated; this decision does not have to be recorded in a logbook.
- E. If the work does require a work permit, the WCC shall issue a work permit number from his/her logbook and fill out section 1 of the permit and as much of section 2 as possible. The work permit form, along with instructions on how to fill it out, are shown in [ESH 1.3.6, Attachment 1](#).

Note: All WCCs shall maintain a work planning logbook. The logbook shall contain the following information, at a minimum.

- Date of request
- Description of work
- Job rating (low, medium, high)
- Work permit number

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- F. The WCC shall categorize the job as low-, moderate-, or high-rated based on his or her detailed knowledge of the ESH&Q issues, complexity, and work coordination. The rating guidelines shown in [ESH 1.3.6, Attachment 4, Table 2](#) can be used to determine whether the ESH&Q issues are low, moderate, or high. The ratings for complexity and work coordination are based on the job site knowledge of the WCC. The WCC may decide that the job is low-rated and not process the work permit beyond filling out the front side and signing on the back of the permit, along with the service provider.
 - G. If a job site walkdown is required, the Work Control Coordinator shall determine which personnel are needed and shall assemble the team. The size of the team can vary depending on the complexity of the job. On complex jobs, the team may include Health Physics, Industrial Hygiene, and/or other ESH&Q subject matter experts. The primary function of the Walkdown Team is to visit the job site, identify the ESH&Q issues and work controls on the work permit, discuss the work plans, and agree on a final job rating (low, moderate, or high) for the work.
 - H. The WCC shall complete the work plan section with input from the Walk Down team, including ES&H personnel as needed. A written description shall detail the job and any precautions that need to be taken. If the ES&H risk level is rated high, then a Job Safety Analysis (JSA) must be written and attached to the work permit.
 - I. The WCC is responsible to obtain the approval signatures in section 3 of the work permit. If the job is to be walked down, then the signatures can be obtained following the walkdown. If a walkdown is not required, then the approvals can be obtained by circulating the permit.
- Note:** All work permits for jobs that are rated as moderate or high require, at a minimum, the signature of the Primary Reviewer. A list of Primary Reviewers for the Superconducting Magnet Division can be found on the [Division List for Work Control Coordinators and Primary Reviewers](#).
- J. The job site supervisor shall conduct a pre-job briefing with the workers to review the job hazards, work controls, work plan, permits, and coordination requirements. The job site supervisor and the workers shall sign the form in section 4, to indicate that they have read the form and understand the requirements.
 - K. The WCC shall sign the permit in section 5, *Conditions are Appropriate to Start Work* to authorize the start of the job. Before signing, the WCC shall

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review the permit, verify that the required work controls are in place, and determine that the job may proceed.

- L. The WCC is responsible to solicit feedback from the workers, and shall record comments in section 7 of the work permit. Copies of all work permits with feedback comments shall be sent to the Work Control Manager or designee, who shall forward feedback comments to the Lessons Learned Coordinator as appropriate.
- M. The WCC shall review the completed form, perform a quality check, and sign the form in section 8. All completed work permits shall be kept in the logbook. On an annual basis, the WCC shall send the logbook and work permits to the Work Control Manager or designee.

5.2 Planning and Controlling External Work

NOTE: *A flow diagram of the procedural steps listed in this section is shown in [ESH 1.3.6, Attachment 7](#).*

- A. All work requests for external services shall be screened by the Work Control Coordinator to determine if a work permit is required.
- B. If the work does not require a work permit, it is considered low-rated; this decision does not have to be recorded in a logbook.
- C. If the work does require a work permit, the WCC shall issue a work permit number from his/her logbook and fill out section 1 of the permit and as much of section 2 as possible. The WCC shall retain a copy of the work permit and send the original to the service provider.
- D. The WCC shall schedule a walkdown of the job with the service provider and the walkdown team. The walkdown team shall review the job and determine the job rating (i.e. LOW, MODERATE, or HIGH). If the job is rated low, then the WCC and the service provider must sign the back of the form; no further review of the permit is required and no additional signatures are necessary.
- E. If the job is rated moderate or low, the WCC shall complete the work plan section with input from the Walk Down team, including ES&H personnel as needed. A written description shall detail the job and any precautions that need to be taken. If the ES&H risk level is rated high, then a Job Safety Analysis (JSA) must be written and attached to the work permit.

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- F. The WCC is responsible to obtain the approval signatures in section 3 of the work permit.

Note: All work permits for jobs that are rated as moderate or high require, at a minimum, the signature of the Primary Reviewer. A list of Primary Reviewers for the Superconducting Magnet Division can be found on the [Division List for Work Control Coordinators and Primary Reviewers](#).

- G. The job site supervisor shall conduct a pre-job briefing with the workers to review the job hazards, work controls, work plan, permits, and coordination requirements. The job site supervisor and the workers shall sign the form in section 4, to indicate that they have read the form and understand the requirements.
- H. The WCC shall sign the permit in section 5, *Conditions are Appropriate to Start Work* to authorize the start of the job. Before signing, the WCC shall review the permit, verify that the required work controls are in place, and determine that the job may proceed.
- I. The WCC is responsible to solicit feedback from the workers, and shall record comments in section 7 of the work permit. Copies of all work permits with feedback comments shall be sent to the Work Control Manager or designee, who shall forward feedback comments to the Lessons Learned Coordinator as appropriate.
- J. The WCC shall review the completed form, perform a quality check, and sign the form in section 8. All completed work permits shall be kept in the logbook. On an annual basis, the WCC shall send the logbook and work permits to the Work Control Manager or designee.

5.3 Change of Work Scope

If changes to an active work request are made that present new hazards, the Work Permit and the new hazards must be discussed with the Work Control Coordinator as appropriate to the Work Permit requirements. The changes and new hazards shall be noted on the existing Work Permit Form, and shall be initialled and dated by those people who originally approved the permit. The workers shall be notified of the changes.

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6.0 Documentation

- 6.1 Completed Work Permits and written reports or minutes of Worker feedback shall be maintained in the Work Planning and Control file repository.
- 6.2 Work Control Coordinators shall annually send a copy of the Work Planning Logbook to the Work Control Manager or designee.

7.0 Attachments

- 1. Flow Diagram of Internal Work

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ATTACHMENT 1: INTERNAL WORK FLOW

